



The effect of virtual working spaces on higher education collaborative learning in JAMK

Juuso Savolainen
Minna-Mari Virnes

Bachelor's thesis
November 2016
School of Business and Services Management
Degree Programme in Facility Management

Jyväskylän ammattikorkeakoulu
JAMK University of Applied Sciences

Author(s) Savolainen, Juuso Virnes, Minna-Mari	Type of publication Bachelor's thesis	Date November 2016
	Number of pages 51	Language of publication: English
		Permission for web publication: x
Title of publication The effect of virtual working spaces on higher education collaborative learning in JAMK		
Degree programme Facility Management		
Supervisor(s) Kay-Jones, Simon		
Assigned by JAMK University of Applied Sciences		
<p>Abstract</p> <p>The objective was to study the virtual working space C108 in JAMK University of Applied Sciences in Jyväskylä, Finland from a pedagogical point of view and determine whether the space promoted collaborative teaching and learning.</p> <p>The theoretical part addressed collaborative learning as a concept, and the elements tied to it, as well as dealt with the background of virtual working spaces and the operational issues connected to these spaces. Furthermore, the differences between traditional and virtual working spaces were discussed. The empirical part covered a survey conducted with the teachers the School of Business of JAMK University of Applied Sciences. The study used a qualitative research method. The survey was designed to provide insight from the users, as well as potential users, about the virtual working space C108 in the Rajakatu campus.</p> <p>The results of the study suggest that JAMK University of Applied Sciences should make a plan for the following issues in order to improve the usefulness of the space: helpdesk for the users of the space, thorough orientation for the hardware and software used in the space in addition to investing in better, high-quality equipment for the AV-systems.</p> <p>As a conclusion, it can be stated that the usage of virtual working spaces will increase in the future. However, in order to use the spaces effectively, more information and more training will be needed both for teachers and students. Finally, JAMK University of Applied Sciences will need to invest, both financially and intellectually, in the betterment of the virtual working spaces so as to stay ahead of the current phenomenon of telecommuting.</p>		
Keywords (subjects) Virtual working spaces, virtual learning, collaborative learning, digital natives		
Miscellaneous		

Tekijä(t) Savolainen, Juuso Virnes, Minna-Mari	Julkaisun laji Opinnäytetyö, AMK	Päivämäärä Marraskuu 2016
	Sivumäärä 51	Julkaisun kieli Englanti
		Verkkojulkaisulupa myönnetty: x
Työn nimi Virtuaalityöskentelytilojen vaikutus korkeamman asteen koulutuksen yhdessäoppimiseen JAMK:ssa		
Tutkinto-ohjelma Degree Programme in Facility Management		
Työn ohjaaja(t) Kay-Jones, Simon		
Toimeksiantaja(t) Jyväskylän ammattikorkeakoulu		
<p>Tiivistelmä</p> <p>Tutkimuksen tarkoituksena oli tutkia Jyväskylän ammattikorkeakoulussa sijaitsevaa virtuaalityöskentelytilaa C108 pedagogisesta näkökulmasta ja arvioida tilan vaikutusta yhdessäoppimisen ja -opetuksen tukena.</p> <p>Teoriaosuus käsitteli yhdessäoppimista ja sen osatekijöitä konseptina sekä virtuaalityöskentelytilojen taustaa ja tilojen operatiivisia näkökulmia. Lisäksi käsiteltiin perinteisen ja virtuaalisen työskentelytilan eroja. Opinnäytetyön empiirinen osio käsitti mielipidekyselyn, joka suoritettiin yhteistyössä Jyväskylän ammattikorkeakoulun liiketalousyksikön opettajien kanssa. Tutkimuksessa käytettiin kvalitatiivista tutkimusmenetelmää. Kysely suunniteltiin tuomaan näkemystä virtuaalityöskentelytilan C108 käyttäjiltä sekä potentiaalisilta käyttäjiltä. Tila C108 sijaitsee Rajakadun kampuksella.</p> <p>Tulokset osoittavat, että Jyväskylän ammattikorkeakoulun tulisi tehdä suunnitelma, joka koskee seuraavia asioita, jotta tilan hyödyllisyyttä saataisiin parannettua: neuvontapalvelu tilojen käyttäjille, syväluotaava perehdytys tilan laitteistoille ja ohjelmille sekä investoinnit parempiin, korkealaatuisiin laitteisiin AV-koneistoa varten.</p> <p>Päätelmänä voidaan osoittaa, että virtuaalityöskentelytilojen käyttö laajenee tulevaisuudessa. Tilojen käyttäminen tehokkaasti vaatii kuitenkin lisäopetusta ja lisätietoutta opettajien ja opiskelijoiden suuntaan. Lopuksi voidaan sanoa, että Jyväskylän ammattikorkeakoulun täytyy investoida virtuaalityöskentelytiloihin rahallisesti sekä älyllisesti, jotta nämä tilat pysyvät etätöiden ilmiön edelläkävijöinä.</p>		
Avainsanat (asiasanat) Virtuaalityöskentelytilat, virtuaalinen oppiminen, yhdessä oppiminen, diginatiivit		
Muut tiedot		

Contents

1	Introduction.....	3
1.1	JAMK University of Applied Sciences	3
2	Collaborative learning	4
2.1	Student-centered learning	4
2.2	The definition of collaborative learning.....	5
2.3	The elements of collaborative learning.....	5
2.4	Benefits of working in a collaborative learning environment	8
2.5	Incorporating collaborative learning to the virtual classrooms in JAMK.....	8
3	Virtual working spaces	10
3.1	The definition of a virtual working space	10
3.2	Virtual working spaces in JAMK.....	11
3.3	Virtual working spaces versus traditional class environment.....	13
3.4	Exploring the benefits and threats of virtual learning	15
4	Course composition in JAMK	16
4.1	Courses offered virtually	16
4.2	Amount of group work within courses in JAMK	18
5	The changing school environment	19
5.1	The changing classrooms	19
5.2	Digital natives in a school environment	20
6	Research process	21
6.1	The research questions and objective of the research	21
6.2	Qualitative research method	22
6.3	Reliability and validity of the research	23
7	Results	24
7.1	Thesis survey about JAMK virtual space C108 in Rajakatu	24

7.2	Timeline of the research.....	25
7.3	Research questions.....	26
8	Research discussion	34
8.1	Technological issues	34
8.2	Physical versus virtual attendance.....	35
8.3	Collaborative learning in the virtual space C108.....	36
8.4	Space design and management.....	37
8.5	Future outlook of the virtual spaces	38
9	Conclusions.....	38
	References	40
	Appendices	44

Figures

Figure 1.	Elements of collaborative learning	6
Figure 2.	Collaborative learning in virtual classrooms	9
Figure 3.	Illustration of telecommuting and a virtual classroom (Virtual Class Room. N.d.).....	11
Figure 4.	Process overview of the usage of virtual working space C108.....	12
Figure 5.	Traditional classroom environment versus virtual learning environment.....	13
Figure 6.	Courses offered by JAMK in semester 2015-2016.....	16
Figure 7.	Amount of credits and virtual credits in courses	17
Figure 8.	Group work as part of the content of the courses offered in the HBA14S1 programme.....	18
Figure 9.	Research process overview (My Market Research Methods 2011) ..	23
Figure 10.	Users of the virtual working space	30
Figure 11.	Rode NTG-1 wide range microphone (Rode Microphones 2016)	35
Figure 12.	Evoko Room manager interface (Evoko N.d.)	38

Tables

Table 1.	The list of courses named in the questionnaire	26
Table 2.	Assignments and working hours of the courses named in the questionnaire	29

1 Introduction

According to research conducted by Johnson & Johnson (2009), students' collaboration is an effective way of learning, and it has a positive impact on the whole class environment. Cooperation is the key to essential life skills, such as building relationships and working with colleagues. Furthermore, skills in technology, as well as oral and aural skills, are improved by cooperating and working with others. (9.)

The research in this thesis was constructed to provide information about how students and teachers experienced the effect of collaborative learning in a virtual working space situated in room C108 in Rajakatu campus of JAMK University of Applied Sciences (later referred to as JAMK). In order to gain information about the subject, a survey was created and sent to the teachers of the business unit of JAMK. The opinions and observations risen from the answers of the survey were used to suggest improvements and point out weak points in the virtual working environment.

The perspective of the study was that of the teachers. In other words, the study focused of whether the virtual working spaces promote collaborative learning and how JAMK should utilize the spaces for maximum benefit for the teachers and students. The main focus in the thesis was the teachers' understanding and experiences of the virtual working spaces. The theoretical framework of the thesis was based on literature, online and paper publications as well as existing research and written experiences.

1.1 JAMK University of Applied Sciences

JAMK is an institution of higher education located in Central Finland, in the city of Jyväskylä. The institution has four different schools: The Vocational Teacher Education College, The School of Health and Social Care, the School of Business and the School of Technology and Transport. The units are located in Jyväskylä and in the Tarvaala area of Saarijärvi. (About JAMK 2016.)

JAMK offers education for approximately 8500 students of different nationalities. The vision of JAMK is to be the best university of applied sciences in 2020 with a strong focus on improving the quality of education, internationalization and promoting an entrepreneurial attitude. The mission of the university is to be an internationally-oriented educational pioneer and an expert in research and development. In accordance with the vision and mission, the values of the university are responsibility, trust and creativity. (ibid.)

2 Collaborative learning

In the following chapters collaborative learning is discussed as a part of student-centered learning. First, the report explains the term student-centered learning. Next, collaborative learning is singled out as a part of the concept of student-centered learning. Collaborative learning is then thoroughly addressed and tied to the research into the virtual working space in JAMK.

2.1 Student-centered learning

Student-centered learning in school environments implies that the teaching activity is transferred from the teacher to the student. The activity can be implemented in many ways, for example, by forming different assignments, employing varied instructional strategies and changing the way students are grouped together. There are different methods to promote learning in this activity and some of them are listed below. (Abbott 2014; Seng 2014.)

The first method is active learning in which students ponder on issues, answer questions and ask questions of their own during class to solve dilemmas. Discussion, explanations and debate are also parts of the strategy. The next method is collaborative learning in which students are grouped to work on problems in a manner that employs positive interdependence and individual accountability. Collaborative learning is pertinent to this thesis and it is

subsequently discussed in detail. The third method is inductive teaching and learning in which problems are presented to the students who have to study materials and sources in order to address the open-ended problems. (Felder & Brent 2009; Seng 2014.)

2.2 The definition of collaborative learning

As a term, collaborative learning translates to learning in groups in a way that the students learn more efficiently through interaction and by helping each other to learn by discussing problems and offering different solutions. The learning methods may vary from discussing the given materials to making case-studies or conducting research on a given topic. The social element is the key in engaging students to be more active and in achieving better solutions. The purpose of the collaborative activity is to ensure that the group has made progress in such a way that the whole team has an understanding of the discussed topic. (Collaborative Learning 2012; Cooperative Learning 2012; Research Spotlight on Cooperative Learning 2014; Dooly 2008, 21-22.)

Collaborative learning differs from individual work in group situations. The main difference between the two activities is that while collaborative learning is purely about social interdependence and how to create solutions to problems, individual work in group situations has emphasis on a teacher-controlled learning environment, and this may offer limited maneuverability in peer-to-peer learning. (Cooperative Learning 2012; Dooly 2008, 21-22.)

2.3 The elements of collaborative learning

The five (5) basic elements of collaborative learning are positive interdependence, individual accountability, face-to-face interaction, interpersonal and small group social skills and group processing. (See Figure 1.) The elements are further discussed below.

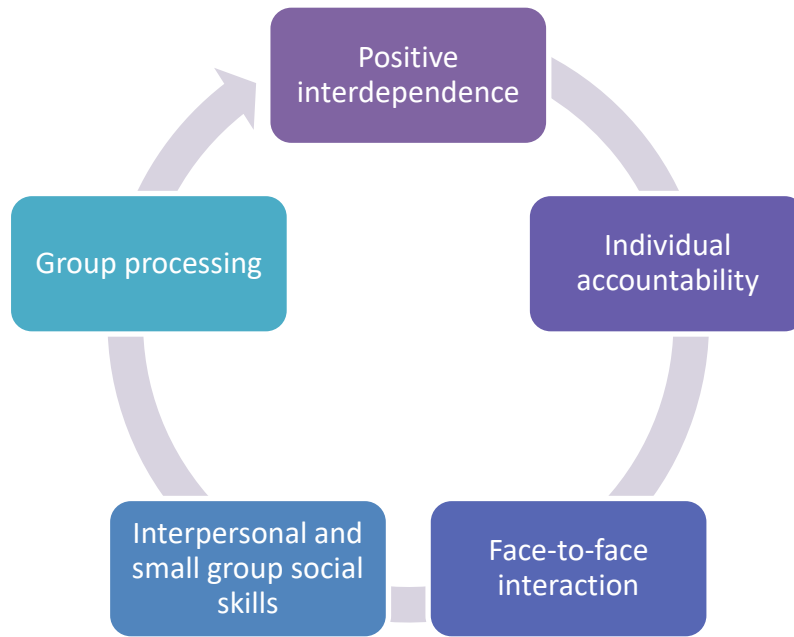


Figure 1. Elements of collaborative learning

Positive interdependence

The term positive interdependence derives from the fact that in group work situations, the individuals should be as committed to their personal success as well as to their teammates. The mentality in which the individuals feel that they cannot complete the task without others is best used to describe this element. In practice, the team should only have individuals who work for the sake of the group's success, and every person should be an invaluable asset concerning skills and knowledge. (Johnson & Johnson 2009, 2-3; Barkley, Cross & Major 2005, 9-10.)

Individual accountability

Individual accountability in group work means that the students should be accountable for their own contribution to the work. The goal is to have the students take responsibility and be strengthened by their own workload. After the group activity, the students should be better prepared to perform in similar situations. The role of the teacher is to make a note of how each of the students contribute to the task as well as provide them with feedback. (Johnson & Johnson 2009, 3-4; Barkley, Cross & Major 2005, 9-10.)

Face-to-face interaction

The main reason to engage in collaborative learning is to be able to create beneficial discussion in order to complete the current task. Motivation, trust and a low threshold for participation should be present so as to encourage the students to be active in a class environment. The aim is to create a setting for the students where they provide each other with assistance, exchange and process information as well as receive feedback to improve their efforts and learning in the future. (Johnson & Johnson 2009, 3; Barkley, Cross & Major 2005, 9-10.)

Interpersonal and small group social skills

The social skills of the students usually develop over time and with practice. In group work situations, the students should be able to trust each other, communicate effectively, support one another and settle conflicts in a constructive manner. In order to be able to work efficiently, the students should have an understanding of group dynamics and social interaction. Teaching students the importance of high-quality collaboration and supporting their motivation to use their skills in group work are essential to ensuring the group's productivity. (Johnson & Johnson 2009, 4.)

Group processing

The last element is group processing which aids students in identifying how well their group is functioning. The method should be used to recognize the activities which contribute to the successful completion of the current task. The process can be divided into two parts: reviewing the actions of the group members and making decisions about which actions are beneficial and which are not. These two activities can be used on a small group level or with the whole classroom. Nevertheless, the final outcome should be a case where students feel that they have done important work and that because of that work, the whole group has benefited. (Johnson & Johnson 2009, 4-5.)

2.4 Benefits of working in a collaborative learning environment

Extensive research has been conducted to determine the benefits of the collaborative learning environment. The research done by Anudra A. Gokhale (1995) is a good example. The research was performed with students from the Western Illinois University. According to the author, comparing to the basic way of individual learning, collaborative learning is more efficient, long-lasting and develops critical thinking that helps the students to succeed. For example, self-management and oral communication are very important aspects to develop when thinking of the future life of the students. Furthermore, the activity of working in groups is more enjoyable and may increase motivation towards learning. Moreover, the information learned through group activity is retained longer. (Johnson & Johnson 2009; Barkley, Cross & Major 2005, 9-10; Gokhale 1995.)

The aforementioned research gives direction for the effective use of collaborative learning. Gokhale (1995) concluded that gaining information based on facts is as effective with individual learning as with collaborative learning. However, collaborative learning is more beneficial when improving critical-thinking skills and problem-solving skills.

2.5 Incorporating collaborative learning to the virtual classrooms in JAMK

In the virtual classroom C108 in JAMK, collaborative learning may be implemented with one teacher or multiple teachers and with one student or multiple students. (See Figure 2.) The purpose of this classroom is to offer face-to-face interaction with e-learning compared to teaching and learning that is solely done via e-mail or other virtual correspondence.



Figure 2. Collaborative learning in virtual classrooms

In this thesis, the main focus was on group learning, specifically on the cases of one teacher-multiple students or multiple teachers-multiple students. The reason to exclude the multiple teacher-one student and one student-one teacher cases was that they were not relevant to the objective of the research in this thesis.

One teacher and multiple students

This is the general method used in both traditional and virtual environments. One teacher is leading the group of students, giving assignments and initiating discussion. As observed in the five elements of collaborative learning, social skills and face-to-face interaction play a critical part in enhancing the motivation and trust in the work group. In a traditional classroom, the objective is quite easily achieved, as social skills are required for working in these situations. However, in a virtual environment, it may be hard to create a similar learning experience. As Brindley, Walti and Blaschke (2009) point out, the students should engage in social activities, although not physically present in the school campus. The access in the environment should not be only to the content, such as the teaching materials and the teacher's monologue, but rather to interact and connect with the other students in a group environment.

Multiple teachers and multiple students

The multiple teachers and multiple students -method can also be called team teaching, where two or more teachers collaborate to share their expertise with the class. The teachers may be present at the same time or take turns in teaching the class. The benefits of this method originate from the teacher dialogue and sharing expertise with one another as well as from producing an environment where the students can benefit from a higher degree of knowledge. In a virtual environment, one could argue that, based on the article by Marisa Kaplan (2012), the teachers should be present in the same space. The reason for this is that it may be hard to collaborate through AV-equipment about issues connected to teaching as the students will also hear the communication. This may cause the students to be confused about the direction of the class. (Marisa Kaplan 2012; Team/Collaborative Teaching 2016.)

3 Virtual working spaces

Our objectives for the thesis were to determine if the virtual spaces would be beneficial to collaborative learning in JAMK and what the virtual spaces should be like in order to fully support collaborative learning in a virtual environment. In this part of the thesis, the virtual working spaces are defined, traditional classrooms are compared to virtual working spaces and a more detailed explanation is given of JAMK's own virtual working spaces.

3.1 The definition of a virtual working space

A virtual working space can be described as a teaching and learning environment in which the participants, for example, teachers and students can communicate, interact, complete assignments and collaborate through telecommuting and teleconferencing. The main difference from a traditional classroom environment is that the participants are rarely in the same space,

or even in the same city. Communication is done with web cameras and/or microphones. (Definition - What does virtual classroom mean? 2016; Virtual Classroom 2016)



Figure 3. Illustration of telecommuting and a virtual classroom (Virtual Class Room. N.d.)

3.2 Virtual working spaces in JAMK

As far as the authors know, JAMK has only one space committed to virtual working. The space is situated in room C108 in Rajakatu, the main campus. The room is located in the C-wing and it is situated in a way that outside noise affects the teaching as little as possible. The room also has paneling to provide acoustics and dampen the echo, which can occur in normal classrooms.

The space is approximately 10 square meters and it has a computer, a sound system, headphones with a microphone, a webcam and a camera stand for more demanding use. This makes the space well-equipped for webinars and virtual teaching.

The process used in the spaces is described in the following chart. (See Figure 4.)

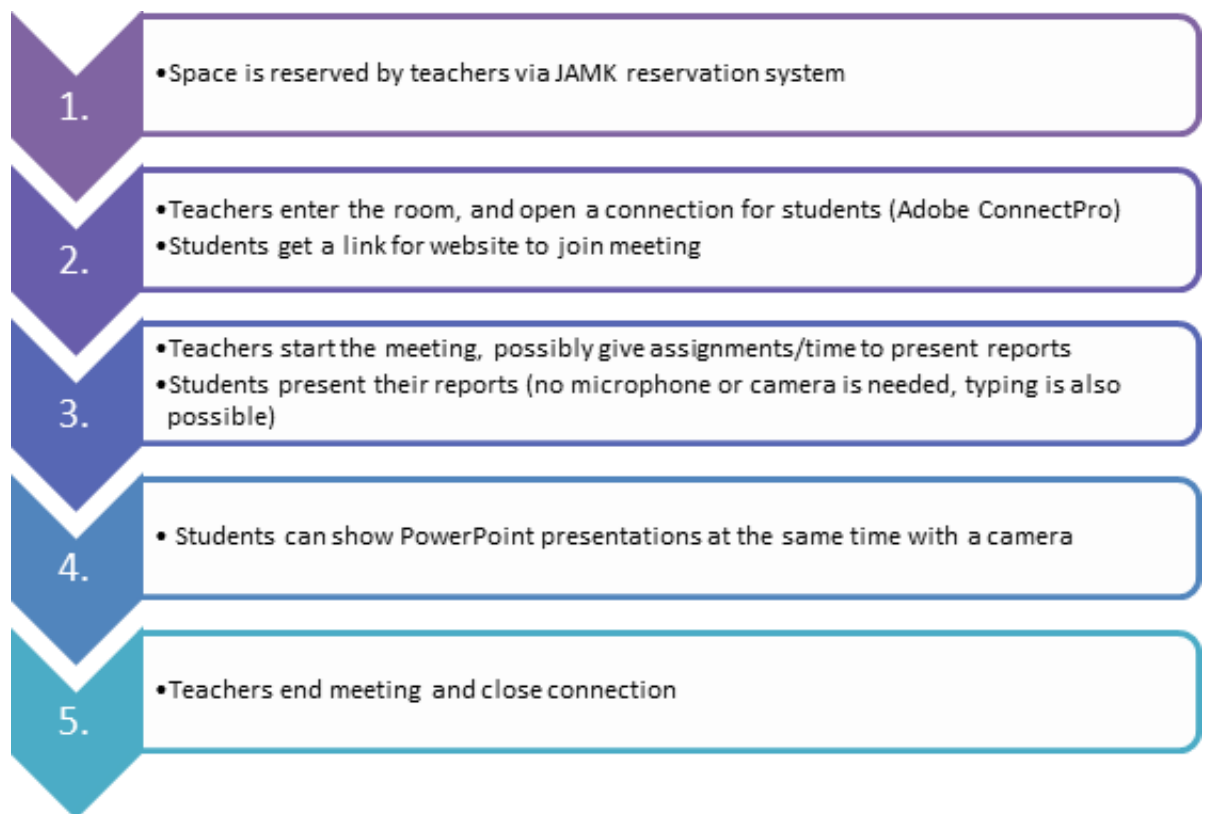


Figure 4. Process overview of the usage of virtual working space C108

The space can be reserved from the JAMK reservation system, either from the lobby or by using the teachers' own credentials. The system shows the timetable on a calendar in which it is possible to view and book rooms. After a reservation has been made, the teachers inform the students of an upcoming meeting by sending a link for the virtual room either via e-mail or by using the JAMK resource system, Optima. The teachers then initiate the meeting by opening a connection with a compatible program, for example, Adobe ConnectPro. The participants can register to the program or join the meeting as a guest. (Sharing and Attending Meetings 2016.)

After the students have joined, the teacher can then show materials, talk via the microphone and type in the room chat. If the students are presenting materials, they can do so by uploading slideshows which will be visible to all participants. The students may also use a microphone and/or a camera for their presentations. Other students may give comments and feedback in real

time to the presenter via the chat. Finally, at the end of the meeting, the teacher is able to close the connection to end the meeting. However, the students will have to exit the virtual room as well, because otherwise the line will remain open and use unnecessary bandwidth. (ibid.)

3.3 Virtual working spaces versus traditional class environment

In the current era of rising online education, it has become easier to shift from traditional learning in a classroom environment to a completely virtual environment. This new way of learning has caused a major change in the curriculum and in the structure of teaching. Consequently, this change has brought both benefits and disadvantages to the schools.

In Figure 5, the benefits of the traditional classroom environment and the virtual learning environment are listed in contrast to each other. Finally, a summary is made to determine which of these ways will be a more practical approach to teaching in the future.

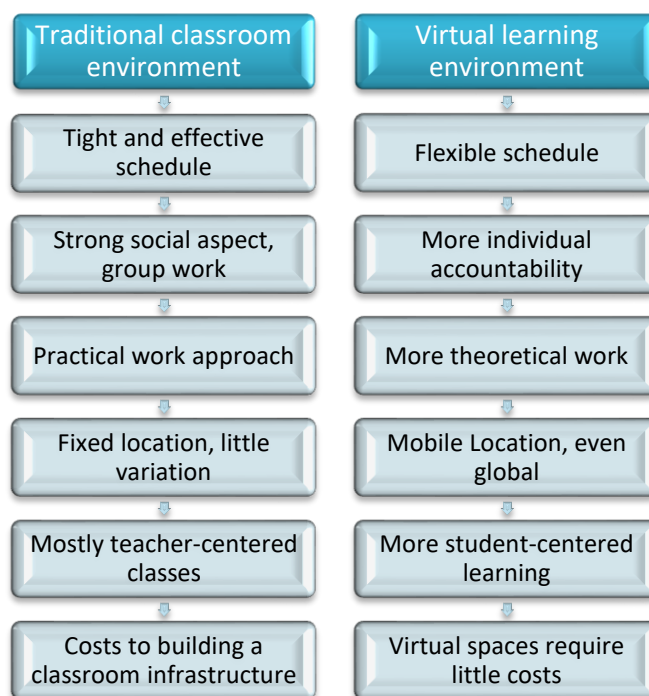


Figure 5. Traditional classroom environment versus virtual learning environment

Initially, the two ways of learning seem to be at an equal balance concerning the quality of teaching and its effectiveness. However, in-depth observation reveals fundamental differences in the methods. (Bird 2014; Banerjee 2011; Classroom vs. Online Education: Which One is Best? 2016.)

Firstly, the scheduling of the classes is varied in both ways of learning. The rigid schedule where the teaching is structured in the traditional classrooms is opposed by a flexible one in the virtual environments. The flexibility is perfect for people who have family obligations or a work schedule which prohibits the student from attending the classes physically. However, the classroom setting offers social and interpersonal communication in a group setting (See Chapter 2.3). This can be considered a more effective way of learning in terms of collaborative learning. (ibid.)

Virtual environments excel in giving the power of the learning process to the learner, leaving the teacher as more of a director or an advisor to the whole class. This student-centered approach can aid in the learning of students from different levels, ensuring that a broader range of subjects can be taught simultaneously. Finally, the costs to the school in the building and upkeep of physical spaces can be high as opposed to the level of maintenance that virtual environments require. (ibid.)

As a conclusion, both ways of learning have benefits in different areas. The answer lies in the students or learners themselves. The traditional way offers more social aspects and can be easier to be committed to. The virtual environment offers more flexibility and is easier to participate in. These are also more cost-effective. Considering the current trends and the future of schools, the main focus may gradually begin to shift towards online education and virtual learning. This aspect is discussed further in Chapter 5. (ibid.)

3.4 Exploring the benefits and threats of virtual learning

In an article written by Anna Kivinen (2016a), a respondent from Jyväskylä University studying information systems stated that most of the work in the programme is done virtually. However, this is due to the fact that the student has made the decision to study in this way. According to the study management director of Jyväskylä University, the amount of virtual work is dependent on the student's study programme. In the information systems programme, the reason for the high amount of virtual work is due to the fact that most of the students are already in working life, which makes studying easier and more fluid. (10.)

In another article written by Anna Kivinen (2016b), a different outlook is taken concerning the virtual learning environment. According to a professor in the Jyväskylä University whom Kivinen interviewed, the secondary level learning institutions are also affected by the rise of virtual teaching and learning. The interviewee fears that the increase in virtual learning will result in the alienation of students from the social environment. Furthermore, the professor states that about one third of students are lacking in readiness for working in virtual environments. Another interviewee, the CEO of AME Ry agrees with the professor, stating that the risk for alienation is real. Both of the interviewees feel that collaborative learning, and especially face-to-face learning, should not be dismissed, as being physically present in the classroom with other students and teachers develops the person's interaction and social skills, which is one of the elements in the elements of collaborative learning. These elements were discussed thoroughly in Chapter 2.3. (4.)

The work of Johnson & Johnson (2009) supports the fact that face-to-face interaction helps to form relationships and maintain a social competence that can be lacking in virtual environments. In addition, physically working in groups and exchanging ideas and information is efficient, which can be hard to achieve when working virtually. (3.) However, the matter can be turned upside down, as in a virtual environment, sharing information and ideas with the whole group can be easy through various types of software without having to physically be present (See Chapter 3.2.).

4 Course composition in JAMK

In the following chapters the course composition in JAMK is addressed. The study uses the Finnish degree programme of business (HBA) group HBA14S1 as a benchmark for the courses offered in the academic year of 2015-2016. The table of courses offered in the academic year of 2015-2016 in the HBA programme can be seen in Appendix 3. Courses affiliated with practical training were excluded from the study.

4.1 Courses offered virtually

From the total of 69 courses offered for the group HBA14S1, 17 were offered to be executed completely virtually (See Figure 6).



Figure 6. Courses offered by JAMK in semester 2015-2016

The total number of credits offered for the group in the semesters of 2015-2016 was 331. From the total of 331 credits, 122 were offered to be completed virtually. As can be seen in Figure 7, the number was 37% from the total number of credits which were offered (Opintotarjonta 2015–2016. N.d.)

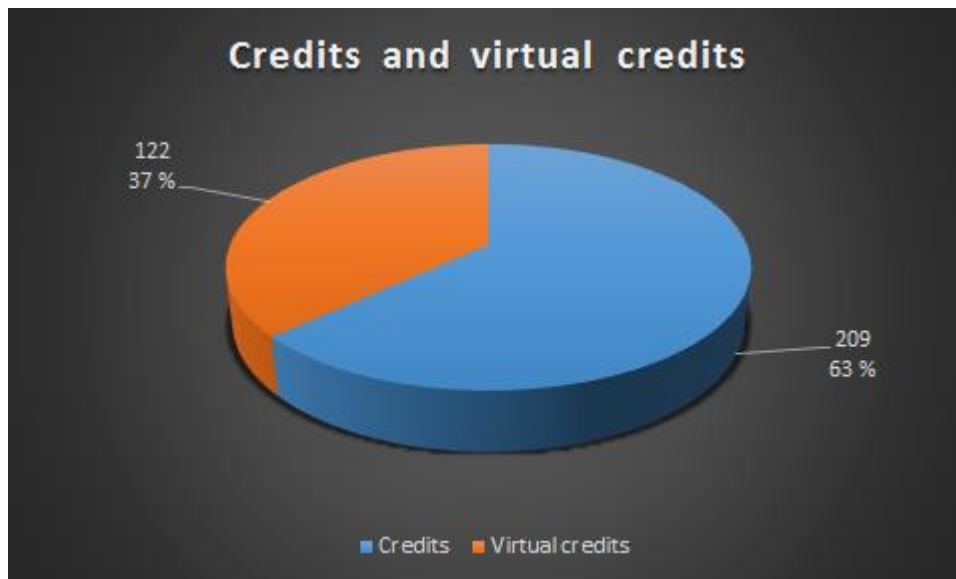


Figure 7. Amount of credits and virtual credits in courses

The number of courses offered virtually excluded the amount of time used for learning and teaching in virtual environments within a course. All of the courses offered included some amount of working in the virtual environment. For example, the courses Kannattavan toiminnan ohjaus (HBL21710) and Työsuojelu ja työhyvinvointi (HBH21700) did not offer any virtual credits, but still one course consisted of 54 hours and the other of 15 hours of virtual studying.

When addressing virtual credits or virtually offered courses in JAMK, one should understand that they consist of teaching and learning in the virtual working environment, Optima. Thereby, the virtual working hours offered do not tell us anything about the usage of the virtual working space C108 or any similar circumstances. The study on the virtual credits offered does, however, explain the amount of time used in front of a computer when teaching and learning in JAMK. This can, therefore, be used in the discussion whether or not virtual working spaces are currently needed.

4.2 Amount of group work within courses in JAMK

From the total number of 69 courses offered in the HBA14S1 programme, 30 mention group work as part of the course content (See Figure 8). Even though group work is not mentioned in the other 39 courses' description, some of their content may still include group work through group processing or face-to-face interactions (See Chapter 2.3).

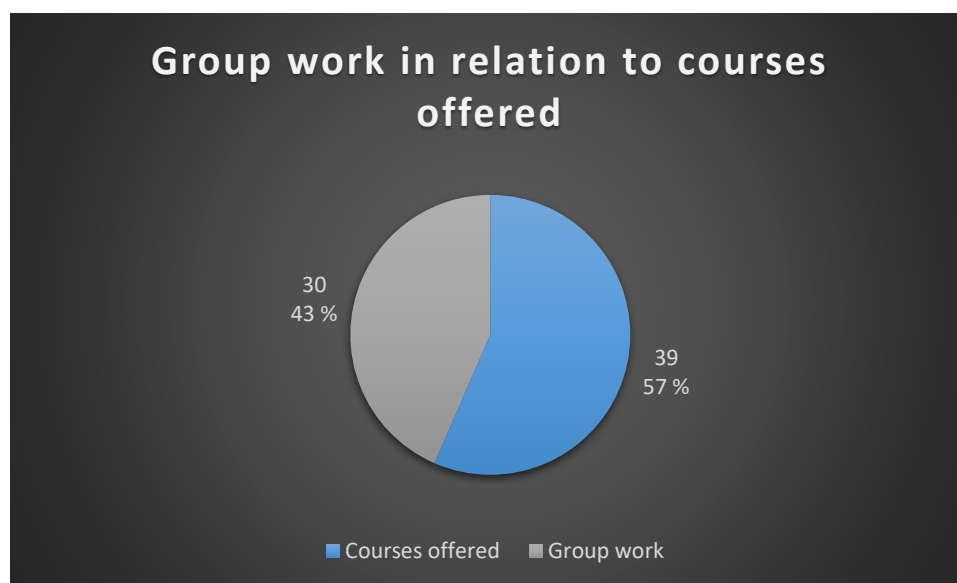


Figure 8. Group work as part of the content of the courses offered in the HBA14S1 programme

Due to the high occurrence of group work within courses, it is apparent that JAMK has internalized the usage of collaborative teaching and learning. With this in mind, the authors included a question about the amount of group work in the questionnaire concerning the virtual working space C108 (See Chapter 7.1).

5 The changing school environment

The current change in educational learning environments is a dynamic and mobile phenomenon. Schools are moving from age-old mass education practices to a more fluid and open-ended system. This new system brings changes to the schools' practices and introduces challenges to the school environment. Firstly, the balance between formal school learning and informal out-of-school learning needs to be closely monitored to determine how and whether these two practices should be controlled in terms of quality. Secondly, the system of state-controlled schools may be diminishing as the need for centralized learning becomes less important. Thirdly, the possibility of receiving formal education outside of schools, such as workplaces and with folk educators, questions the need for arrangements for supporting school education. (Facer 2011, 17; Withrow, Long & March 1999.)

5.1 The changing classrooms

Concerning classrooms in a school, the changes are mostly technological. The spaces that were equipped with blackboards may now have whiteboards, and instead of fixed computer stations, there may be tablet computers. However, occasionally classrooms have not been updated and refurbished to meet the needs of the current teaching methods. The workstations may not be ergonomic to work with a laptop computer, causing back problems and headaches. Furthermore, classroom lighting may need alteration, as traditional teaching methods require a higher level of lighting compared to the current situation. Students working on laptops and tablets may experience glare and difficulty to see what is on the screen with too much lighting. The option is to dim the lighting and pull down the curtains, if possible, to avoid strain on the eyes. (Michael 2013; Barrett 2013.)

Concerning JAMK, the points discussed in this chapter could be integrated to classroom design and they should be kept in mind when redesigning classroom spaces. Furthermore, when discussing the usefulness of the C108

space, it is important to keep these points in mind. In addition, the students could be integrated in the process by engaging them in the discussion about the design issues or incorporating designing a classroom space to the curriculum of a course. (ibid.)

5.2 Digital natives in a school environment

Digital natives are people who were born during or after the rise of digital technologies. This new generation of digital learners challenges the educators and researchers to consider the possible repercussions on the future school system. Most households nowadays have a computer in some form or another, which makes accessing information online very easy. Studying in a virtual environment helps students to succeed also in schools as well as in everyday life. (Facer 2011; Great Schools Partnership 2014.)

Considering a school environment, the teaching of digital natives is changing the rigid curriculum of the old practices. According to Keri Facer (2011), a study she was involved with showed that trial-and-error learning in the digital environments as well as just-in-time help from the family circle can enhance skill development in children. The learning is driven by interest and friendships, which makes the method effective as external sources help drive the pupils further in the process so that the learning is meaningful. (18-19.)

The same principle could be applied to adult students, especially with virtual and self-directed learning. Peer-to-peer education and practice as well as receiving help when needed are important for achieving long-lasting and effective learning.

6 Research process

In the following chapters, the research method and process as well as data collection and analysis are described. Furthermore, the questionnaire and tables can be found in the appendices section. The data collection is done via the questionnaire to the teachers about JAMK's current situation with virtual teaching and studying. In addition, data is gathered about courses, participants and spaces in JAMK's electronic system with the help of personal observations.

The research process in this thesis consists of total of eight parts: forming the research questions, reviewing the necessary literature, narrowing the scope of the research and defining concepts, choosing a focus group for the research, planning how data is collected and analyzed, the collection of data and finally analyzing the results. (Blankenship 2010.)

The research process in this thesis was initiated in 2013 when the original author started planning the draft for a thesis based on space design and the ways of learning. The agreement for this type of thesis was made with JAMK and the final decision to research virtual spaces within JAMK and make a recommendation on how to use them effectively. In 2014, the second author joined the research and most of 2014 and 2015 was dedicated to the theoretical side of the thesis. In the beginning of 2016, the questionnaire for the thesis about the virtual space C108 was formed and sent to teachers of JAMK. The questionnaire and results were then compiled and analyzed, after which the recommendations for the effective use of virtual spaces were established. Finally, the thesis was reviewed and finalized.

6.1 The research questions and objective of the research

The aim of this research is to study the existing virtual space C018 in Jyväskylä University of Applied Sciences, how the space is used and what it should be like to benefit collaborative learning. The final objective of the thesis is to find

ideas and concepts of how to develop the virtual space further. This space should respond to the present needs in universities of applied sciences.

The thesis concentrates on a physical space and the host company for the research is the facility services of JAMK. In this context the virtual space means a physical space created for virtual teaching and learning. This space has been created to JAMK during the past few years.

Our main research questions are as follows:

- In its current state, how well does the virtual space C108 promote collaborative learning?
- How to utilize the space to provide maximum benefit for students and teachers?

6.2 Qualitative research method

The research method used in this thesis is a qualitative research method. The aim of the method is to collect information on how the target group behaves and how they perceive a certain phenomenon or topic. Furthermore, the method uses in-depth studies such as interviews or discussions to aid in construction of hypotheses about a certain issue. As opposed to quantitative research, this research method can be more flexible and the original questions of the research may evolve and change during the process. (Types of dissertation 2012; What is Qualitative Research? 2015.)

This research method was chosen for this thesis due to the fact that the topic of virtual spaces requires discovery of facts and findings rather than compiling numerical data. Furthermore, the results of this thesis are based on people and their opinions, as well as the observations and arguments of the authors. This empirical side of the research was the reason for choosing a qualitative research method. (ibid.)

Since qualitative research consists of finding empirical evidence, the authors used an open-ended survey to gather the necessary data. The questions in the

survey are posed in way that the researchers gain valuable information from the respondents with straightforward and simple questions. The perspective of the respondent on the matter of virtual teaching is important. These issues contributed to the decision to use a questionnaire for gathering research data. (ibid.)

6.3 Reliability and validity of the research

Reliability in qualitative research means that the results are consistent and that the results could be replicated with similar research methods, however the results may differ slightly in some ways. Validity in qualitative research means that the appropriate tools are used for the research. In practice, this means that the research questions and methodology support, and are valid in relation to the research topic and results. Taking these issues into account, the research in this thesis is reliable and valid. (Leung 2015.)

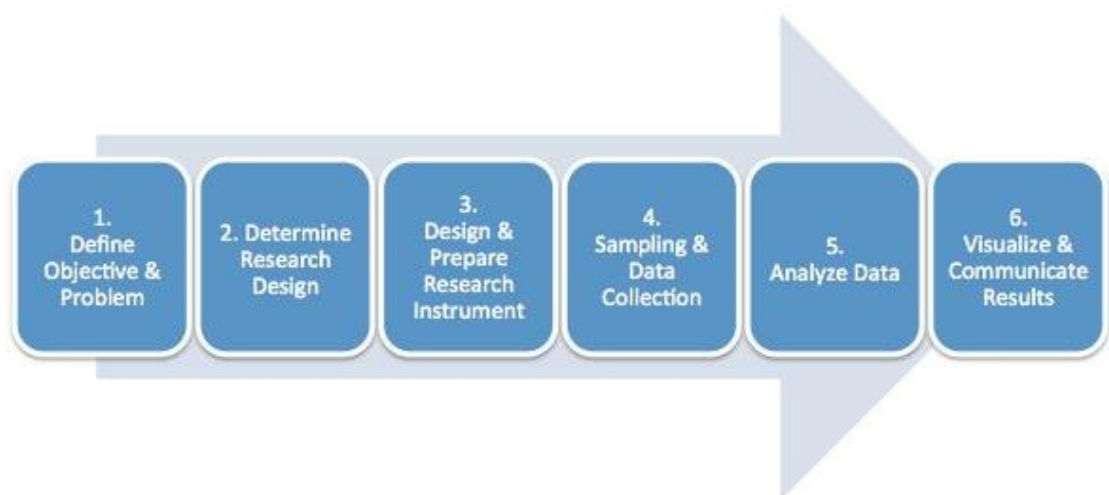


Figure 9. Research process overview (My Market Research Methods 2011)

7 Results

The main objectives of this thesis were to ascertain whether the current virtual working space promotes collaborative learning amongst students and teachers as well as how to better utilize this space in an effort to provide maximum benefit for learning. In this chapter of the thesis, the final results of the data collected and analyzed will be introduced.

The authors in cooperation of JAMK facility services were set to gather information of the use of the virtual working space in JAMK, specifically in connection to current teaching and learning. The aim is to offer recommendations and ideas about how to improve the concept of virtual teaching and learning.

7.1 Thesis survey about JAMK virtual space C108 in Rajakatu

In order to gain focused information about the subject of the thesis, a survey was created and sent to the teachers of the business unit of JAMK. In the survey, the respondents were asked five questions, with the two first having sub-questions. The authors offered a picture of the C108 virtual space for easy reference on how the space is organized.

The first question was constructed to obtain information whether teachers had used the space and how large were the group sizes that participated in these classes. In the second question, the respondents were asked if they had participated in or organized teaching in this space. If the respondents had not participated in or organized teaching in this space, the respondents were then asked why they had not used the space. Furthermore, the respondents were asked how teaching in a virtual space affected collaborative learning between students and how their teaching methods differ from teaching in a virtual space compared to a traditional classroom environment.

The last three questions were formulated to determine the opinions of the respondents, specifically how they would improve the space and how they see this space will shape the future school environment. Finally, the respondents were given free rein to give feedback concerning virtual spaces as well as the questionnaire (See Appendix 2.)

7.2 Timeline of the research

The research was first conducted on 20.03.2016 via the Microsoft Outlook program. The participants were the teachers of the School of Business who were added to the surveys mailing list from the JAMK intranet. The format of the survey was a Microsoft Word document which the participants were asked to return to the author via email. The survey was in both English and Finnish. After sending, the authors realized that a permit was needed from JAMK to send surveys to teachers. At this time the research was stalled.

The authors set out to gain the permit from JAMK and after a month, the permit was signed and approved. The new and improved survey was sent to the teachers of the School of Business from the Webropol service, which JAMK students are able to use freely. Webropol is a platform where users are able to create and manage surveys, as well as run various reports with the results of the survey. The authors new survey had the same questions as the previous one, but the format change was done to make answering easier and more effective. The Webropol service was coherent and the user interface was easy to use. Furthermore, the service was directly connected to JAMK user accounts, which made it a sensible program to use. (Webropol 2016.)

7.3 Research questions

Background questions

The survey began with a short introduction which stated the purpose of the survey and the deadline for submitting the answers. The first question for the respondents was to choose a preferred language for the whole survey in which the choices were Finnish and English. From the total of nine respondents, eight chose Finnish and one chose English as their preferred language.

On the next page, the respondents were asked to provide two courses between five to ten credits and where at least ten students had participated in. In addition, to offer deeper insight into these courses, the respondents were asked what the courses entailed, how many students participated in the course and how much of the work was done virtually by way of hours and assignments.

The Finnish respondents listed a variety of courses. The names of the courses can be seen in Table 1.

Table 1. The list of courses named in the questionnaire

List of courses	
Sustainable hospitality	Toimitilajohtaminen tapahtumassa
Consumer behaviour	Food and Consumer
Operatiivinen johtaminen	Taloushallinnon peruskurssi
Global growth strategies	Markkinointi
Entrepreneur and business planning	Media Analysis
Ruuan laatutekijät	Ravitsemispalveluiden ja konseptien suunnittelu
Digitaalinen markkinointi	Testaus
Tilinpäätösanalyysi	Taloushallinto

The respondent who answered the questions in English listed globalization and strategy as a course.

Information about the courses

Next, the respondents were asked to describe the content of the courses listed. The sustainable hospitality and toimitilajohtaminen tapahtumassa -courses were not discussed by the respondent thoroughly. However, it was explained that around 30 to 40 students participated in the courses. The second respondent also was quite withholding with information about the consumer behaviour, and food and consumer courses. The respondent listed both courses as five-credit ones. Consumer behaviour course was attended by 60 students, and food and consumer course was attended by 40 students.

The third respondent however went into depth in the descriptions. The first course was matkailuyrityksen operatiivinen johtaminen which entails several important points of learning, the first being leadership and the requirements of a manager and own preparedness. Furthermore, different form of leadership, for example change management, team management and wellness management are discussed. In addition, ethics of leadership, pertinent legislation concerning management and the central content of the collective labour agreement for the hospitality field are addressed in the course. The planning of workforce usage, the drafting of schedules and the security management of staff and customers are a part of the course. The second course was taloushallinnon peruskurssi which entailed the basics and terms of financial management, accounting, financial statements, VAT-calculations, gross margin calculations and budgeting. Matkailuyrityksen operatiivinen johtaminen -course was attended by 32 students and taloushallinnon peruskurssi -course enrolled about 30 students.

The fourth respondent wrote that global growth strategies entails emerging business and entrepreneurship, and markkinointi entails different competitive means. The attendance in these courses varied from 30 to 60 students.

The fifth respondent went into some detail with the courses. Entrepreneur and business planning course entails going into depth about small enterprises of music and media and planning a business idea. Media analysis course is a more theoretical course, according to the respondent, with issues such as learning media content analysis tools and applying them into a selected media content. Only 10 to 15 students attend the courses. The respondent said that

the reason for this is that Music and Media Management degree programme, in which the courses are connected, is discontinued.

The sixth respondent had a short answer for this question, as only the credits for the courses were mentioned. Ruuan laatutekijät -course is a five credit course and ravitsemispalveluiden ja -konseptien suunnittelu -course is a ten credit course. Ruuan laatutekijät -course is enrolled by 20 students and ravitsemispalveluiden ja -konseptien suunnittelu -course is attended by 15 students.

The seventh respondent had two courses to offer, digitaalinen markkinointi -course and testaus -course. Digitaalinen markkinointi -course entails working with digital marketing and testaus -course included testing different programs. The first course was attended by 40 students and the latter by 10 students.

The eighth and final Finnish respondent offered two courses named tilinpäätösanalyysi, a five credit course, and taloushallinto, also a five credit course. The course tilinpäätösanalyysi entails financial statement corrections, characteristics, making a financial calculation and its characteristics, and a value diagnosis of a company. The second course taloushallinto included the basics of accounting and financial statements, VAT -issues, taxing, gross margin calculations and budgeting.

The English respondent offered the course globalization and strategy, which is a five credit course. The respondent mentioned that further information about the course can be found in the ASIO student portal.

Amount of virtual work

In this part, the respondents were asked how much of the courses workload was done virtually, specifically how many hours and assignments was allocated to this way of teaching. The question was asked as to offer insight to the amount students were already spending in virtual environments. The results are presented in the following table:

Table 2. Assignments and working hours of the courses named in the questionnaire

Course name(s)	Assignments	Working hours
<i>Sustainable hospitality, toimitilajohtaminen tapahtumassa</i>	Six to eight larger assignments and many smaller ones	135 hours, purely virtual
<i>Consumer behaviour, food and consumer</i>	-	5 x 27 hours per student, purely virtual
<i>Operatiivinen johtaminen</i>	Optima assignments, webinars, hospitality business simulation	40 % of the course is webinars
<i>Taloushallinnon peruskurssi</i>	Optima assignments, videos and questionnaires	Around 50 % virtual work
<i>Global growth strategies, markkinointi</i>	Around 3-8 assignments depending on the scope	Around 100 hours of virtual work
<i>Entrepreneur and business planning, media analysis</i>	4 to 5 assignments, reading materials, slideshows and a book	Around 100 to 130 hours of work
<i>Ruuan laatutekijät</i>	-	135 hours of work
<i>Ravitsemispalveluiden ja -konseptien suunnittelu</i>	-	10 hours of work
<i>Digitaalinen markkinointi, testaus</i>	Independent work, videos and reading materials	-
<i>Tilinpäätösanalyysi, taloushallinto</i>	Contact lessons, independent work and reading	Out of 5 credits, 60 hours of virtual work

Usage of the virtual classroom

In the next part of the survey, the respondents were asked whether they had used the virtual working space in room C108 for teaching. Depending on the answer, the respondents arrived at a different question in the next part. If the respondent answered 'yes', they were consequently asked questions about teaching and learning in that space. If the respondent answered 'no', they skipped the aforementioned questions and arrived in a more general question about the improvements to virtual working spaces. Of the nine respondents, three had previously used the virtual working space C108 for teaching purposes.

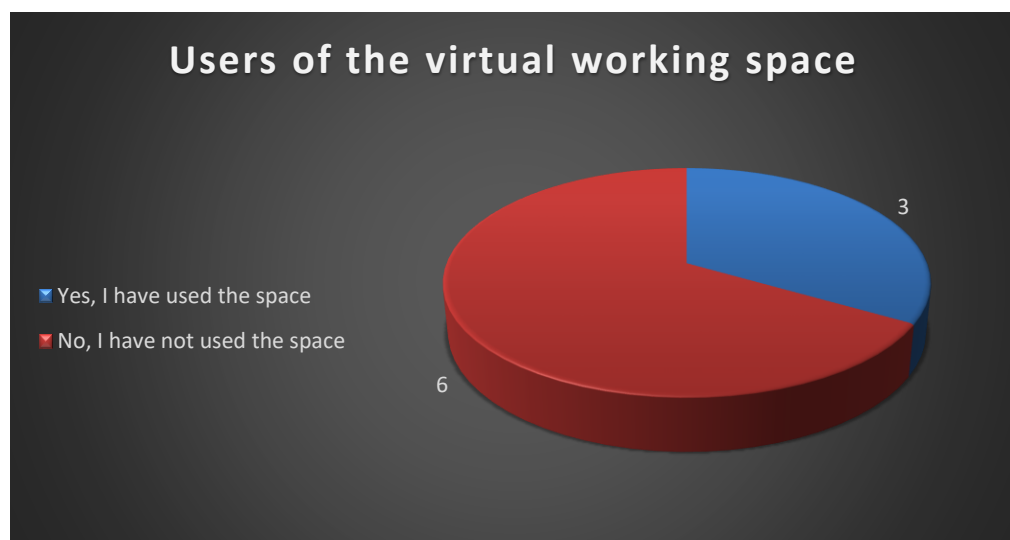


Figure 10. Users of the virtual working space

The respondents who answered 'no' were asked to give examples why they had not used the space for teaching. The first respondent felt that it was not necessary to use the space as it was easy to record the lessons from home on a computer or a tablet and upload it to the students. The videos were done with the Screenomatic program, if the respondent felt necessary to show materials and talk at the same time. Furthermore, the students did not need to participate in a class and could watch the material from home.

The second respondent was not aware of the space C108 in Rajakatu. The third was unsure where to reserve such as space. The fourth had not needed to use the space and the fifth said that the courses were not suitable to be taught in a virtual working space.

The effect on teaching methods and collaborative learning

The respondents who answered 'yes' to teaching in the room C108 were asked about the effect of working there on collaborative learning. And they were also asked to offer insight into how their teaching methods varied from teaching in a traditional classroom.

The first respondent felt that there had been no effect on collaborative learning when using the space. The second answered positively about the space, saying that the space was peaceful and had good audio. The third, however took a different point of view, telling that the space was small and that space really has no effect when working in a virtual environment.

Concerning teaching methods, the first respondent surmised that as the teaching style in a virtual classroom is different compared to teaching in a traditional classroom, the space had no effect on the respondent's own style. The second respondent also answered 'no' to the question, but expressed concern about the effect on student participation as the method of virtual teaching may intimidate the students. Furthermore, sometimes the student's own equipment, especially microphones may not work in virtual environments. The third respondent felt that the space had no effect on the teaching method, whereas surmised that only technology has an effect on the issue. As a conclusion, the respondent said that the technology is lacking, but did not elaborate on the issue.

Student opinion on the virtual classroom

Next, the respondents were asked whether students had commented or given feedback after working in the virtual working space and to give examples of these comments. The first of the three respondents who answered 'yes' to the previous question stated that the students had not given feedback about the space, as they had always been elsewhere, for example at home when the respondent was conducting lessons. The second respondent answered simply

that student had given positive feedback, though did not elaborate on the issue. The third respondent had a similar view with the first, stating that the students had not physically been in the space, but always telecommuting from another location.

Improvements to the virtual classroom

In this part, all of the respondents were asked how, in their opinion, should JAMK improve these virtual working spaces. The first respondent indicated that JAMK had new virtual working spaces that they had not used, whereas the room C108 served well in Adobe Connect Pro meetings and assignments breakdowns. The second respondent felt that JAMK should have help and technical assistance available more readily concerning the space. The third respondent expressed that the computer in the room C108 sometimes disconnects and that the room itself could be more comfortable.

The fourth respondent delved into technical details about the space. The opinion of the respondent was that the space should have a proper camera, a headset or alternatively an echo microphone, speakers, acoustics and that all necessary equipment should start with one button. The fifth respondent continued with technical issues, saying that the space should be equipped with ergonomic chairs and headsets. The sixth respondent summarized that JAMK should have more spaces like C108 and there should be a constant help desk regarding the use of those spaces. The seventh and eighth respondents both said that they had not used the space for teaching, however the eighth respondent offered the use of camera assistant as an idea. The ninth and final respondent there is sometimes problems with the equipment and that the microphone should cover a larger area to pick up voices, in case there are many students in the space.

Effect on the future of teaching in schools

Next, the respondents were asked to describe the effect that virtual teaching will likely have on the future of teaching in schools. The first respondent gave insight about how the teachers job may involve more work if some students are physically present and other telecommute. However, it was implicated that the change may affect learning in a positive way, as the students have different

ways to approach teaching, for example watching a video of the lesson at a later time. The second respondent also maintained a positive outlook on the effects to school environments. The answer contained several points: The change will put an emphasis on live meetings, as they become rarer, and teaching and learning will become more centralized, using places of encounters and sharing while the actual teaching will happen via internet. The third respondent summarized that the change is imperative to survival.

The fourth respondent took a more neutral point of view, saying that both traditional and virtual learning are both as effective, but that virtual participation is helpful to students that cannot be physically present. The fifth respondent answered negatively, saying that some students may benefit from virtual learning, but to others it might lower motivation and level of skill. As a conclusion, the respondent said that virtual teaching might be considered as individual teaching, which is not cost-effective and an efficient way of teaching.

The sixth respondent simply argued that learning will change its shape and virtual teaching will complement the traditional one. The seventh respondent said that the change will bring flexibility to both teachers and students, but requires studying new technologies and best practices. The eighth respondent stated that virtual teaching and learning works in some subjects. The ninth and final respondent concluded that there is already an increased level of virtual learning and that it will increase in the future.

Feedback on the questionnaire

In the final question of the survey, the respondents had an opportunity to give feedback concerning the questionnaire or about the virtual working spaces in JAMK. The question was optional and five of the respondents answered it.

The first respondent felt that the questionnaire should have had a broader picture about virtual spaces, not only the room C108 as it is quite small. It was mentioned that JAMK is constantly developing the spaces in which teaching is performed. The second respondent felt that the problems in virtual teaching are not tied to the spaces, but rather to technical difficulties such as network and compatibility issues. The third respondent said that virtual teaching does

not necessarily need spaces, unless lecturing is done via Adobe Connect Pro or other programs for an audience. The fourth respondent gave feedback and told that the authors should have defined the term ‘virtual’ in the questionnaire more clearly. The fifth respondent had heard that JAMK had improved the spaces, but was not entirely sure. The hope for the respondent was that JAMK would offer guidance on how to use these spaces. The final and sixth respondent felt that every classroom is a potential virtual working space and offered similar thoughts about the need for JAMK to offer guidance as the fifth respondent had given.

8 Research discussion

In this part of the thesis, the implications of the study and the main points for improvement and changes are presented concerning the virtual working space C108 in JAMK.

8.1 Technological issues

Technological issues were a large part of the study and many insights were given in that regard in the survey. As the space is designed for telecommuting and teleconferencing via technology, this should not be an aspect that hinders the process. JAMK should consider adding a microphone with a longer reach in the C108 space. This addition will be helpful when a larger group is physically present in the space, as the microphone will catch voices even from the farthest end of the room. Furthermore, acoustics in the room are not up to expectations. The addition of acoustic panels on the walls and ceiling will decrease echo and prevent sound from entering or exiting the room. In Figure 11, an example of a wide range microphone is presented.



Figure 11. Rode NTG-1 wide range microphone (Rode Microphones 2016)

Concerning the human side of technical issues, JAMK should have round-the-clock support for the users of the virtual working spaces. It is the authors' understanding that technical support is available primarily during business hours. If JAMK cannot spare resources for this kind of service, it would be possible to outsource the tasks to another company, for example.

Alternatively, JAMK could construct a comprehensive training and help manual regarding the use of the space and its equipment that would be available in the physical space and also on the JAMK intranet. If assistance is not available continuously, the usage rate of the space may decline.

8.2 Physical versus virtual attendance

Many of the research respondents felt that physical attendance of students in the virtual space was not the main idea of the space, rather, it was the attendance via telecommuting from home, library or another public place. Naturally, this is a more practical approach as teachers spend most of their days in the campus, whereas students might live far away from the school or be visiting another city at the time of the lessons (See Figure 4).

Telecommuting enables a more flexible working environment where the

virtual working space is the medium and the teacher the anchor. The students connect to this anchor by using the available technology, such as a computer or a tablet. Programs, such as Adobe ConnectPro (See Chapter 3.2) maintain the feeling of being present, even though the whole group may be scattered across the country, or the world.

8.3 Collaborative learning in the virtual space C108

The general consensus between the respondents was that the space itself did not make a major contribution to collaborative learning. However, the question may have been poorly designed for gaining insight on the issue. The authors' intent was to gain information about whether the space, and virtual spaces in general, had any effect on the collaborative learning and teaching. Nevertheless, a few good points arose from the answers. The space was described to have a relaxing atmosphere and a soothing environment, which helped organize teaching in a way that the respondents found useful and effective.

As observed in Chapter 2.5, the social interaction of the students is more important than the fact that they are able to access content and reading materials in the virtual environment. The virtual space C108 can be used to offer social interaction between students and teachers by using the right tools and methods. The equipment can be utilized for a similar kind of group processing used in traditional classrooms, such as creating beneficial discussions to complete a task as well as debating on various problems. However, some factions of students may not perceive the activity as being social compared to face-to-face interaction in a traditional classroom. It may be hard to see the other students' emotions and body language, which might make it more difficult relay the correct message to each other.

8.4 Space design and management

The space design of room C108 is quite minimalistic in terms of furniture, offering a few chairs and a table with a computer. The purpose of the design is to offer a calm and irritant-free environment for virtual teaching and learning. However, the design may backfire if a larger group of people are physically present in the space. With this in mind, the space should have more capabilities for transformability, for example, an additional, bigger space connected to the room with a doorway, so that larger groups could attend without risk of overcrowding. Another view for space design could be ergonomic chairs. The chairs currently in the space are basic classroom chairs used throughout JAMK's classrooms. These chairs are not functional for this kind of a space where there is no need to sit with attention towards the blackboard and teacher. Rather, the space gives a certain freedom in selecting chair types because the camera can be moved around.

Concerning management, the room reservation is currently done from JAMK's reservation system. Teachers can access this system themselves, but students have to reserve the space from the lobby desk. For easier accessibility for both the teachers and students, the room should have its own electronic reservation system with a screen next on the door of the space. On this screen, one can see the reservations for the day or for the whole week or even a month. One example for this could be the Evoko Room Manager, a touch screen that can be mounted on a wall. The reservations can be managed through email, and double bookings are thus eliminated. The Manager shows the current time, the room it is connected to and who has reserved the space, as well as the end time for the reservation. This equipment could also be incorporated to other meeting rooms and classrooms in JAMK, and it could be beneficial concerning the technical development of the school's systems.

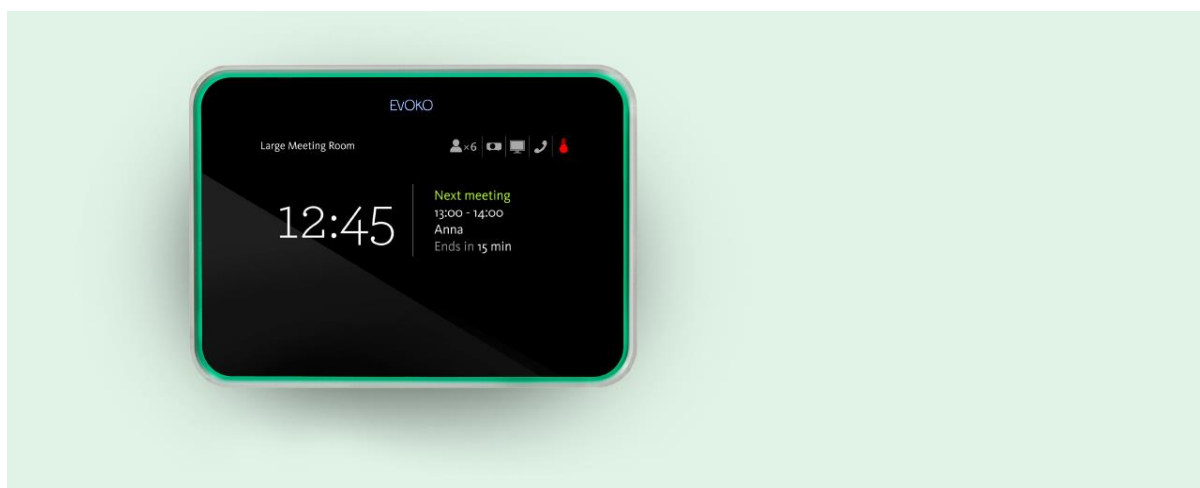


Figure 12. Evoko Room manager interface (Evoko N.d.)

8.5 Future outlook of the virtual spaces

The future of virtual spaces is becoming clearer as technology develops and new systems are incorporated into the school environment. Teaching will possibly be affected in a way that teaching will become a more centralized phenomenon, using different access points, such as libraries and home computers to join in on meetings and classes that are initiated from virtual spaces in school campuses. The spaces will increase in number, but not necessarily in size. As fewer and fewer students physically attend the classes in the campuses, the need for the size of spaces will become more irrelevant and cost-ineffective. Therefore, it will be much more prudent to invest in equipment and technology while having many small virtual working spaces in the campus.

9 Conclusions

Based on the present study and the theoretical views collected from various sources, it is safe to say that virtual spaces and especially virtual teaching and learning will have a considerable effect on the future schools both nationally and internationally.

Concerning collaborative learning, virtual spaces will have a profound effect on the composition of this type of learning. Currently, collaborative learning usually happens in traditional classrooms and workgroups, for example, in libraries and other public places. Based on the findings of the present study, the students are seldom in their own homes doing project work in a virtual environment, taking advantage of webcams and microphones. The common practice is that every student in a group or a team does his or her work individually and at the end of the project, the results are compiled and the finalized project is presented. By using virtual environments, the students could be involved in the work of their peers and thus aid them and challenge them to improve their own work. The usage of cameras and microphones is effective and efficient in enhancing the social aspect of working virtually. There is no need to leave home for social interactions, although the importance of meeting face-to-face will not go away.

In order for the virtual spaces to be useful at this time, the technological issues should be tackled by offering adequate support in technological issues and in the usage of the space. Furthermore, the ergonomic aspect of the virtual space should be kept in mind as it differs greatly from that of a traditional classroom and can therefore cause problems with the learning and health of the students and teachers. In addition, the space should accommodate a various number of people, from small groups to larger classes. For this to happen, more virtual spaces will need to be built or converted from traditional classrooms.

Suggestions for future research on this issue could be that emphasis is given to how virtual spaces influence the structure of JAMK as a whole, for example, with regard to financial and time-management issues. Furthermore, studies should be conducted at regular intervals on what kind of an effect the usage of virtual learning and teaching may have in a long-term. Finally, a viewpoint on virtual learning and teaching from other higher education institutions could be incorporated for JAMK's own purposes.

References

- Abbott, S. 2014. *Student-Centered Learning*. Accessed on 23 September 2016. Retrieved from <http://edglossary.org/student-centered-learning/>
- About JAMK. 2016. A page on the Jyväskylä University of Applied Sciences website. Accessed on 23 September 2016. Retrieved from <http://www.jamk.fi/en/JAMK-information/About-JAMK/>
- Banerjee, G. 2011. *Traditional and Virtual Classrooms - What's the Difference?* Accessed on 10 May 2016. Retrieved from <http://www.wiziq.com/teachblog/traditional-and-virtual-classrooms/>
- Barkley, F. & Cross K. & Major, C. 2005. *Collaborative Learning Techniques: A Handbook for College Faculty*. Accessed on 23 September 2016. Retrieved from [https://books.google.fi/books?hl=fi&lr=&id=S82LAWAAQBAJ&oi=fnd&pg=PP1&dq=Barkley,+E.F.,+Cross,+K.P.+%26+Howell+Major,+C.+\(2005\).+Collaborative+learning+techniques:&ots=rw5za2oihi&sig=ifU1dWokh6xIK29l1-PYdVKKm-Y&redir_esc=y#v=onepage&q&f=false](https://books.google.fi/books?hl=fi&lr=&id=S82LAWAAQBAJ&oi=fnd&pg=PP1&dq=Barkley,+E.F.,+Cross,+K.P.+%26+Howell+Major,+C.+(2005).+Collaborative+learning+techniques:&ots=rw5za2oihi&sig=ifU1dWokh6xIK29l1-PYdVKKm-Y&redir_esc=y#v=onepage&q&f=false)
- Barrett, P. 2013. *The small changes in classroom environment that can improve learning*. Accessed on 23 September 2016. Retrieved from <http://www.theguardian.com/teacher-network/2013/apr/25/changing-classroom-environment-improve-learning>
- Bird, K. 2014. *Online vs. Traditional Education: The Answer You Never Expected*. Accessed on 23 September 2016. Retrieved from <http://www.rasmussen.edu/student-life/blogs/college-life/online-vs-traditional-education-answer-never-expected/>
- Blankenship, D. 2010. *Excerpt from Applied Research and Evaluation Methods in Recreation*. Accessed on 23 September 2016. Retrieved from <http://www.humankinetics.com/excerpts/excerpts/steps-of-the-research-process>
- Bridley, J. & Walti, C. & Blaschke, L. 2009. *Creating Effective Collaborative Learning Groups in an Online Environment*. Accessed on 23 September 2016. Retrieved from <http://www.irrodl.org/index.php/irrodl/article/view/675/1271>
- Classroom vs. Online Education: Which One is Best?* 2016. A page on the Kaplan University website. Accessed on 23 September 2016. Retrieved from <http://www.kaplanuniversity.edu/career-moves/classroom-versus-online.aspx>
- Collaborative Learning*. 2012. A page on the Cornell University Center for Teaching Excellence website. Accessed on 23 September 2016. Retrieved from <http://www.cte.cornell.edu/teaching-ideas/engaging-students/collaborative-learning.html>

Cooperative Learning. 2012. A page on the Starting Point - Teaching Entry Level Geoscience website. Accessed on 23 September 2016. Retrieved from <http://serc.carleton.edu/introgeo/cooperative/index.html>

Definition - What does virtual classroom mean? 2016. A page on the Techopedia website. Accessed on 29 June 2016. Retrieved from <https://www.techopedia.com/definition/13914/virtual-classroom>

Dooly, M. 2008. *Constructing Knowledge Together (21-45). Extract from Telecollaborative Language Learning. A guidebook to moderating intercultural collaboration online*. PDF. Accessed on 23 September 2016. Retrieved from https://books.google.fi/books?hl=en&lr=&id=gbSTsLlsYysC&oi=fnd&pg=PA17&dq=Extract+from+Telecollaborative+Language+Learning.+A+guidebook+to+moderating+intercultural+collaboration+online.&ots=QHrnM5h6IW&sig=viPQSIOPhBtVts6dEF5Rg2LH_4c&redir_esc=y#v=onepage&q=Extract%20from%20Telecollaborative%20Language%20Learning.%20A%20guidebook%20to%20moderating%20intercultural%20collaboration%20online.&f=false

Evoko. N.d. *Evoko Room Manager*. Accessed on 23 September 2016. Retrieved from <http://www.evoko.se/products/evoko-room-manager/>

Facer, K. 2011. *Learning Futures: Education, Technology and Social Change*. Accessed on 23 September 2016. London and New York: Routledge.

Felder, R. & Brent, R. 2009. *Active Learning: An Introduction*. PDF document on the North Carolina State University website. Accessed on 23 September 2016. Retrieved from [http://www4.ncsu.edu/unity/lockers/users/f/felder/public/Papers/ALpaper\(ASQ\).pdf](http://www4.ncsu.edu/unity/lockers/users/f/felder/public/Papers/ALpaper(ASQ).pdf)

Gokhale, A. 1995. *Collaborative Learning Enhances Critical Thinking*. Accessed on 23 September 2016. Retrieved from <http://scholar.lib.vt.edu/ejournals/JTE/v7n1/gokhale.jte-v7n1.html?ref=Sawos.Org>

Johnson, R. & Johnson, D. 2009. *An Overview of Cooperative Learning*. PDF. Accessed on 10 May 2016. Retrieved from http://clearspecs.com/joomla15/downloads/ClearSpecs69V01_Overview%20of%20Cooperative%20Learning.pdf

Kivinen, A. 2016a. Yliopistolla vain tentit - Rosa Virtanen opiskelee kotona silloin kun itselle sopii [*Only exams on University campus - Rosa Virtanen studies at home when it serves her best*]. *Keskisuomalainen*, 14 September 2016, 10.

Kivinen, A. 2016b. Moni opiskelija jätetään verkon varaan [*Many students are left at the mercy of the internet*]. *Keskisuomalainen*, 13 September 2016, 4.

Leung, L. 2015. *Validity, reliability and generalizability in qualitative research*. A page on the US National Library of Medicine website. Accessed on 23 September 2016. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4535087/>

Marisa Kaplan. 2012. *Collaborative Team Teaching: Challenges and Rewards*. A page on the Edutopia website. Accessed on 23 September 2016. <http://www.edutopia.org/blog/collaborative-team-teaching-challenges-rewards-marisa-kaplan>

Michael, J. 2013. *The Changing Classroom Environment*. A page on the American School and University website. Accessed on 29 June 2016. Retrieved from <http://asumag.com/furniture-amp-furnishings/changing-classroom-environment>

My Market Research Methods. 2011. *The Market Research Process: 6 Steps to Success*. Accessed on 23 September 2016. Retrieved from <http://www.mymarketresearchmethods.com/the-market-research-process-6-steps-to-success/>

Opintotarjonta 2015-2016. N.d. *Koulutusohjelma- ja ryhmähaku. HBA, Liiketalouden koulutusohjelma, fi*. [Degree programme and group search. HBA, Degree Programme in Business Administration, fi]. HBA14S1. Accessed on 23 September 2016. Retrieved from http://soopas.jamk.fi/pls/ooo/jaksotukset_asiosta.main?lukukausi=5S6K&lu kuvuosi=2015-2016&lang=f&sessio_id=&koul_ohjelma=HBA&lktunnus=HBA14S1

Research Spotlight on Cooperative Learning. 2014. A page on the National Education Association website. Accessed on 23 September 2016. Retrieved from <https://www.nea.org/tools/16870.htm>

Rode Microphones. 2016. *NTG-1 wide range microphone*. Accessed on 23 September 2016. Retrieved from <http://cdn2.rode.com/images/products/ntg-1/gallery/3.jpg>

Seng, E. 2014. *Investigating Teachers' Views of Student-Centred Learning Approach*. PDF. Accessed on 23 September 2016. Retrieved from <http://files.eric.ed.gov/fulltext/EJ1070418.pdf>

Starting and Attending Meetings. 2016. A page on Adobe Connect Pro website. Accessed on 23 September 2016. Retrieved from <https://helpx.adobe.com/adobe-connect/using/starting-attending-meetings.html>

Team/Collaborative Teaching. 2016. A page on the Vanderbilt University website. Accessed on 23 September 2016. <https://cft.vanderbilt.edu/guides-sub-pages/teamcollaborative-teaching/>

Types of dissertation. 2012. A page on the Lund Research Ltd. website. Accessed on 23 September 2016. Retrieved from <http://dissertation.laerd.com/getting-started-p2.php>

Virtual Classroom. 2016. A page on WhatIs website. Accessed on 29 June 2016. Retrieved from <http://whatis.techtarget.com/definition/virtual-classroom>

Virtual Class Room. N.d. A picture on the Reiki Academy website. Accessed on 23 September 2016. http://reikiawakeningacademy.com/wp-content/uploads/2013/06/virtual_class_room.jpg

Webropol. 2016. Survey and Reporting. Accessed on 23 September 2016. Retrieved from <http://w3.webropol.com/our-product/create-questionnaires/>

What is Qualitative Research? 2015. A page on the Qualitative Research Consultants Association website. Accessed on 23 September 2016. Retrieved from <http://www.qrca.org/?page=whatisqualresearch>

Withrow, F. & Long, H. & Marx, G. 1999. *Preparing Schools and School Systems for the 21st Century*. Accessed on 10 May 2016. Retrieved from https://books.google.fi/books?hl=fi&lr=&id=JOo2KVBjRUQC&oi=fnd&pg=PP1&dq=Preparing+Schools+and+School+Systems+for+the+21st+Century&ots=SANYUsJJfM&sig=DQTQ4fGHyihfTu3NYogeIthmKFO&redir_esc=y#v=onepage&q=Preparing%20Schools%20and%20School%20Systems%20for%20the%2021st%20Century&f=false

Appendices

Appendix 1. Permission of research from JAMK

jamk.fi

TUTKIMUSLUPAHAKEMUS

1 (5)

Hakijan tiedot	Nimi	Juuso Savolainen	Henkilötunnus	
	Katuosoite		Postinumero	Postitoimipaikka
			40100	Jyväskylä
	Puhelin		Sähköpostiosoite	
	Tutkimuslaitos, oppilaitos tai muu yhteisö	Jyväskylän ammattikorkeakoulu	Hakijan tehtävä/virka-asema	Opiskelija
Tutkimuksen ohjaaja	Nimi	Simon Kay-Jones	Opinnoista ja ammatti	Lehtori
	Toimipaikka ja osoite	Jyväskylän ammattikorkeakoulu, Rajakatu 35, 40100 Jyväskylä		
	Puhelin		Sähköpostiosoite	
Tutkimuksen toimeksiantaja	Toimeksiantaja	Jyväskylän ammattikorkeakoulu		
	Yhteystiedot	Rajakatu 35, 40100 Jyväskylä		
Päiväys ja allekirjoitus	Paikka ja päivämäärä	Allekirjoitus		
	Jyväskylä 14/1/2016	Juuso Savolainen		
Esittelijä täyttää	<input checked="" type="checkbox"/> Puollan tutkimuslupan myöntämistä		<input type="checkbox"/> En puolla tutkimuslupan myöntämistä	
	Perustelut Opetustyöhön liittyvä tutkimus.			
Päiväys ja esittelijän allekirjoitus	Paikka ja päivämäärä	Allekirjoitus		
	JKL 11/1/16	Kristine Korhonen		
Päättäjän täyttää	Tutkimuslupan myöntäminen			
	<input checked="" type="checkbox"/> Tutkimuslupa myönnetään ja pyydetty tiedot luovutetaan.		<input type="checkbox"/> Tutkimuslupaa ei myönnetä eikä pyydettyä tietoja luovuteta.	
	Myöntämisen ehdot			
	<input type="checkbox"/> Hakijan tulee toimittaa valmis raportti tutkimuksen valmistuttua ja esitellä tutkimuksen tulokset suullisesti <input type="checkbox"/> Hakija sitoutuu maksamaan tietojen luovuttamisesta syntyneet kustannukset <input type="checkbox"/> Muut ehdot			
Perustelut myöntämättä jättämiselle				

Jyväskylän
ammattikorkeakoulu
JAMK University of
Applied Sciences

Postiosoite/
Address
PL 207
FI-40101 Jyväskylä
FINLAND

Puhelin/Tel.
020 743 8100
+358 20 743 8100

Faksi/Fax
(014) 449 9700
+358 14 449 9700

Internet
www.jamk.fi

Y-tunnus 1006550-2

Appendix 2. Survey about the virtual working space C108.



Opinnäytetyökysely virtuaalityöskentelytiloista JAMK:issa / Questionnaire about virtual working spaces in JAMK

Ole hyvä ja valitse kieleesi. Please choose your language *

- ☐ Finnish
☒ English



Valitse kaksi 5-10 opintopisteen kurssia joissa opetat ainakin kymmentä opiskelijaa. *

Mitkä ovat kurssien nimet, mikä on niiden sisältö? *

Kuinka monta opiskelijaa osallistuu kursseille? *

Kuinka paljon kursseilla tehdään työtä virtuaalisesti (tunnit ja tehtävien määrä)? *

Oletko koskaan käyttänyt virtuaalitilaa C108 opetukseen? *

☐ Kyllä

☐ En

Jos et ole, perustele miksi. *

Jos olet käyttänyt tilaa, kuinka kuvailisit tilankäytön vaikutusta yhdessäoppimiseen? *

Onko opetustyylini erilainen virtuaalitilassa kuin tavallisessa opetustilassa? *

Ovatko opiskelijat antaneet kommentteja tai palautetta koskien virtuaalitilaa? Jos he ovat, anna esimerkkejä. *

Miten parantaisit tiloja, joissa järjestetään virtuaaliopetusta? Kerro ainakin kaksi asiaa. *

Kuinka kuvailisit virtuaaliopetuksen vaikutusta opetukseen ja oppimiseen tulevaisuuden kouluja ajatellen? *

Anna vapaasti palautetta ja kommentteja koskien JAMK:n virtuaalitiloja ja tätä kyselyä.



Pick a couple of 5 to 10 credit courses where you teach at least 10 students. *

What are the names of the courses, what do they entail? *

How many students are participating in the courses? *

How much of the work is done virtually (hours and assignments)? *

Have you used the virtual spaces in JAMK (Room C108) for teaching? *

- ☐ Yes
☐ No

If you haven't, describe the reasons why? *

If you have used the spaces, how would you describe the effect of working there on collaborative learning? *

Is your approach to teaching different when you teach in a traditional classroom in contrast to how you teach in a virtual space? *

Have the students given comments or feedback concerning this virtual space? If they have, please give examples. *

In your opinion, how would you improve the spaces in JAMK where virtual teaching is possible? Name at least two issues. *

In your opinion, how would you describe the effect that virtual teaching and learning will have on the future school environment? *

Please, feel free to give thoughts and comments about the virtual spaces in JAMK, or about this survey.

Appendix 3. List of courses offered for HBA14S1 in the semester of 2015-2016

Course identifier	Name of the course	Credits	Completely online	Online credits	Group work
HBF20110	Pankkitoiminta	5		3	0
HBH21210	Itsensä johtaminen ja työyhteisötaidot	5		1	1
HBH21600	Työoikeus	5	1	5	1
HBH21700	Työsuojelu ja työhyvinvointi	5			1
HBH21800	Esimiehen identiteetti ja rooli	5			1
HBH22000	Osaamisen johtaminen	5	1	5	1
HBJ20210	Perhe- ja perintöoikeus	5			1
HBL21520	Kirjanpito 1	5			0
HBL21800	Palkkahallinto	5		2	0
HBL21920	Kansalaisen verotaito	3	1	3	0
HBL22100	Sisäisen laskennan menetelmät	5			1
HBL22200	Urheilun taloushallinto	3	1	3	0
HBM21200	Myyntityön osaaminen	5		2	1
HBM22000	Nordea-polku I	3			0
HBM22300	Customer Insight (in finnish)	5		2	0
HBM22310	Customer Insight (in english)	5		2	0
HBM22400	Asiakaskokemusjohtaminen	5	1	5	0
HBMS2010	Sport Marketing	5		2	0
HBMS2020	Sport Management	5		2	0
HBMS2030	Sport International	5	1	5	0
HBV20210	Muotikaupan tuotetuntemus	6		2	0
HBV20510	Visual Marketing	4		2	0
HBV20800	Vähittäiskaupan toimintaympäristö	5			1
HBV30300	Valikoimasuunnittelu	5		1	0
HTLI2011	International Market Analysis	5			0
HTLI2012	Global Team Leadership	5			0
HTLI2013	International Sales Negotiations	5			1
HTLR2010	Kaupan toimintaympäristö ja kilpailukeinot	5	1	5	0
HTLR2020	Osaston henkilöstön ja myynnin johtaminen	5	1	5	0
HTLR2030	Tunnusluvut ja johtaminen	5	1	5	0
HTLT2001	Ohjelmointia liiketalouden ammattilaiselle	3			0
HBF20310	Finance	5		1	0
HBF20400	Sijoitustoiminta	5		1	0
HBF20500	Kansainvälisen kaupan maksuliikenne	5			0

HBH20810	Strategia	5	1	5	1
HBH20810	Strategia	5			1
HBH21210	Itsensä johtaminen ja työyhteisötaidot	5		0	1
HBH21900	Esimiestyön vuorovaikutustaidot	5			1
HBH22000	Osaamisen johtaminen	5			1
HBH22100	Suorituksen johtaminen	5			1
HBJ20600	Sopimusoikeus	5			1
HBL20210	Arvonlisäverotus	5			0
HBL20220	Financial Communication and Management	3	1	3	0
HBL21520	Kirjanpito 1	5			0
HBL21600	As Oy:n ja yhdistyksen taloushallinto	5		1	0
HBL21710	Kannattavan toiminnan ohjaus	5			1
HBL21920	Kansalaisen verotaito	3	1	3	0
HBL30110	Kirjanpito 2	5		2	0
HBM20610	Brändistrategiat	5		2	1
HBM20620	Brand Strategies	5		2	1
HBM20710	Markkinointiviestintä	5		1	1
HBM21200	Myyntityön osaaminen	5		2	1
HBM22200	Digital Marketing	5		2	0
HBMS2010	Sport Marketing	5	1	5	0
HBMS2040	Sport and Media	5		2	1
HBMS2050	Sport and Event Marketing	5		2	1
HBMS2060	Sport Digital Marketing	5		2	1
HBV20600	Sähköinen liiketoiminta	5			1
HBV20700	Tuotevalokuvaus	4		2	0
HBV20900	Kuluttajansuoja	5		1	1
HBV21000	Kaupan ostotoiminta	5	1	5	1
HBV21100	Hankintatoiminta	4			1
HBV30400	Product Management	5		1	0
HTLI2014	Global Law and Economics	5			0
HTLI2015	Global Joint Ventures and Alliances	5			0
HTLI2016	International Branding	5			1
HTLR2010	Kaupan toimintaympäristö ja kilpailukeinot	5	1	5	0
HTLR2020	Osaston henkilöstön ja myynnin johtaminen	5	1	5	0
HTLR2030	Tunnusluvut ja johtaminen	5	1	5	0
Courses offered	69	331	17	122	30